heat loss at the top of the checkerwork will naturally be several times as rapid as at the cooler end. Hence, if heat insulation is applied, it is necessary to use a greater thickness at the top. In determining the amount of insulation required, a study of the temperature cycle of the wall should be made, as it will throw an important light upon the subject.

The frictional loss through the checkerwork may be approximated by the formula developed by W. A. Mojarow and given in the *Revue de Metallurgie* for May, 1914, page 320.(*> This formula is as follows:

$$y = m\frac{SL}{\omega}v_t p_t.$$

Applying this formula to the conditions existing when the stove is on air, the values of the quantities are as follows:

m — coefficient of friction determined by Mojarow as =0.016 per meter, by observations made upon Cowper stoves;

SL = the heating surface, *8,* being the perimeter of the passes and L their length, for this case =4738 m^2 00;

co = the area of the passes = 7 m^2 40;

v_t = average velocity of gas =2 m 63 per second;

p_t = weight of the gas at temperature and pressure = 1 kg 115 per cubic rneter for air at 1 atmosphere and an average temperature of 360°.

Substituting these numerical values in the formula, the frictional resistance to the passage of the blast is found to be equal to 30 mm of water.

The following computations have been made with a view to the possibility of obtaining higher blast temperatures, say, 900° (1650° F.), with the same volume of blast as the stove tested (16 m^3 78 of free air per second).

Blast temperatures: Maximum of hot blast. . . . 900°

Cold-blast main.
.....
70°
Rise in temperature
.....
830°
Average temperature
.....
485°

([l]) Refer to Appendix IV.